

# PATENT COOPERATION TREATY

# PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY (Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference<br><b>GC830-PCT</b>   | <b>FOR FURTHER ACTION</b>   | See item 4 below  |
| International application No.<br><b>PCT/US2005/005320</b>   | International filing date ( <i>day/month/year</i> )<br><b>17 February 2005 (17.02.2005)</b> | Priority date ( <i>day/month/year</i> )<br><b>23 February 2004 (23.02.2004)</b> |
| International Patent Classification (8th edition unless older edition indicated)<br><b>See relevant information in Form PCT/ISA/237</b> |   |   |
| Applicant<br><b>GENENCOR INTERNATIONAL, INC.</b>  |   |   |

|                                     |  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
|-------------------------------------|--|---|-----------|---------------------|--------------------------|------------|----------|--------------------------|-------------|--|--------------------------|------------|----------------------------|-------------------------------------|-----------|---|--------------------------|------------|-------------------------|--------------------------|-------------|--|--------------------------|--------------|---|
| 1.                                  | This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 <i>bis</i> . 1 (a).  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 2.                                  | This REPORT consists of a total of 7 sheets, including this cover sheet.<br><br>In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.  |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 3.                                  | <p>This report contains indications relating to the following items:</p> <table style="width: 100%;"> <tr> <td style="width: 10%; text-align: center;"><input checked="" type="checkbox"/></td> <td style="width: 30%;">Box No. I</td> <td style="width: 60%;">Basis of the report</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td style="text-align: center;"><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table> | <input checked="" type="checkbox"/>   | Box No. I | Basis of the report | <input type="checkbox"/> | Box No. II | Priority | <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | <input type="checkbox"/> | Box No. IV | Lack of unity of invention | <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement | <input type="checkbox"/> | Box No. VI | Certain documents cited | <input type="checkbox"/> | Box No. VII | Certain defects in the international application | <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |
| <input checked="" type="checkbox"/> | Box No. I  | Basis of the report   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. II   | Priority  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. III  | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. IV   | Lack of unity of invention  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input checked="" type="checkbox"/> | Box No. V  | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. VI   | Certain documents cited   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. VII  | Certain defects in the international application  |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| <input type="checkbox"/>            | Box No. VIII   | Certain observations on the international application   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |
| 4.                                  | The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).   |   |           |                     |                          |            |          |                          |             |  |                          |            |                            |                                     |           |   |                          |            |                         |                          |             |  |                          |              |   |

|  |   |
|--|---|
| <p style="text-align: center;">The International Bureau of WIPO<br/>34, chemin des Colombettes<br/>1211 Geneva 20, Switzerland</p> <p>Facsimile No. +41 22 338 82 70</p> | <p>Date of issuance of this report<br/><b>01 May 2007 (01.05.2007)</b></p> <p>Authorized officer<br/><br/><b>Simin Baharlou</b></p> <p>e-mail: <a href="mailto:pt09.pct@wipo.int">pt09.pct@wipo.int</a></p> |
|--|---|

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

## PCT

see form PCT/ISA/220

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY  
(PCT Rule 43bis.1)

Date of mailing  
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference  
see form PCT/ISA/220

**FOR FURTHER ACTION**  
See paragraph 2 below

International application No.  
PCT/US2005/005320

International filing date (day/month/year)  
07.02.2005

Priority date (day/month/year)  
23.02.2004

International Patent Classification (IPC) or both national classification and IPC  
INV. A23J1/12 A23J3/14 A23J3/34 A23L1/10 A23L1/105 A23K1/16

Applicant  
GENENCOR INTERNATIONAL, INC.

**1. This opinion contains indications relating to the following items:**

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA:



European Patent Office  
D-80298 Munich  
Tel. +49 89 2399 - 0 Tx: 523656 epmu d  
Fax: +49 89 2399 - 4465

Date of completion of  
this opinion

see form  
PCT/ISA/210

Authorized Officer

Smeets, Dieter

Telephone No. +49 89 2399-7492



**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY**

International application No.  
PCT/US2005/005320

---

**Box No. I Basis of the opinion**

---

1. With regard to the **language**, this opinion has been established on the basis of:
  - ☒ the international application in the language in which it was filed
  - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of international search (Rules 12.3(a) and 23.1 (b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
  - a. type of material:
    - ☐ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material:
    - ☐ on paper
    - ☐ in electronic form
  - c. time of filing/furnishing:
    - ☐ contained in the international application as filed.
    - ☐ filed together with the international application in electronic form.
    - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US2005/005320

---

Box No. V Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

---

1. Statement

|                               |             |                   |
|-------------------------------|-------------|-------------------|
| Novelty (N)                   | Yes: Claims | <u>1-15,19-21</u> |
|                               | No: Claims  | <u>16-18,22</u>   |
| Inventive step (IS)           | Yes: Claims | <u>1-15,19-21</u> |
|                               | No: Claims  | <u>16-18,22</u>   |
| Industrial applicability (IA) | Yes: Claims | <u>1-22</u>       |
|                               | No: Claims  |                   |

2. Citations and explanations

see separate sheet

Re Item V.

**1 Reference is made to the following documents:**

- D1 : JP 06 197699 A (YAMANOUCHI PHARMA CO LTD) 19 July 1994 (1994-07-19)
- D2 : US 5 292 537 A (HAMMOND NEAL A [US]) 8 March 1994 (1994-03-08)
- D3 : CHEN W-P ET AL: "PRODUCTION OF HIGH-FRUCTOSE RICE SYRUP AND HIGH-PROTEIN RICE FLOUR FROM BROKEN RICE" JOURNAL OF THE SCIENCE OF FOOD AND AGRICULTURE, WILEY & SONS, CHICHESTER, GB, vol. 35, no. 10, 1984, pages 1128-1135, XP009080988 ISSN: 0022-5142
- D4 : CHANG K C ET AL: "PRODUCTION AND NUTRITIONAL EVALUATION OF HIGH-PROTEIN RICE FLOUR" JOURNAL OF FOOD SCIENCE, INSTITUTE OF FOOD TECHNOLOGISTS, CHICAGO, IL, US, vol. 51, no. 2, 1986, pages 464-467, XP009023493 ISSN: 0022-1147 - cited in the application
- D5 : EP 0 350 952 A2 (BRISTOL MYERS CO [US] SQUIBB BRISTOL MYERS CO [US]) 17 January 1990 (1990-01-17)
- D6 : US 4 894 242 A (MITCHELL CHERYL R [US] ET AL) 16 January 1990 (1990-01-16)

**2 Novelty - Article 33(1) and (2) PCT**

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 16-18 and 22 is not new in the sense of Article 33(2) PCT.
- 2.2 It is pointed out that the protein concentrate *obtainable* according to the process of claims 1 on file does not exclusively relate to compositions comprising undenatured protein as a high temperature treatment afterwards (e.g. sterilisation) or even before the low temperature treatment is not excluded from the process of claim 1.  
The same observation applies to claim 22 on file.  
Therefore, D1, D3-D5 (references see International Search Report) are considered to anticipate the subject-matter of claims 16-18 and 22 on file.  
Moreover, D2 (references see International Search Report) also discloses

compositions comprising undenatured rice protein. The compositions described in D2 are considered to anticipate the subject-matter of said claims as the claimed rice protein concentrates are not further characterized by limiting product features.

### 3 Inventive Step - Article 33(1) and (3) PCT

- 3.1 D3 could be considered as closest prior art for the subject-matter of claim 1 as it also relates to the production of high protein rice flour.
- 3.2 The subject-matter of claims 1 and 19 differ from D3 in that, during liquefaction, a granular starch hydrolysing enzyme (GSHe) is used in addition to the amylase before the insoluble protein residue is separated from the liquefied starch and in that the enzyme treatment is carried out at temperature of maximum 72 °C.
- 3.3 The technical effect of these features is the possibility to obtain a high quality rice protein which is not denatured.
- 3.4 The objective technical problem is therefore providing an improved rice protein concentrate.
- 3.5 D3 (page 1129) discloses the use of Termamyl 60L for liquefaction of the rice flour slurry. Typical reaction temperatures are about 95-100 °C. Then the residue including insoluble protein is removed by centrifugation. Although D3 suggest saccharification of the solubilized starch containing supernatant (from which the insoluble protein residue has already been removed) with an amyloglucosidase at 60 °C, said document does not suggest using said enzyme together with the alpha-amylase at a temperature at or below 72 °C before separating the solubilized starch fraction from the residue. Moreover, D3 does not contain any teaching with respect to the quality of the rice protein.

D2 discloses compositions comprising undenatured rice protein but does not suggest using the combination of a GSHe and a starch hydrolysing enzyme in a process according to claims 1 and 19.

Thus, the subject-matter of claims 1 and 19 is considered to be inventive.

**WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING  
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/US2005/005320

3.6 Claims 2-15, 20, 21 are dependent on claims 1 and 19 and as such also meet the requirements of the PCT with respect to novelty and inventive step.

**4 The following observation is also made:**

4.1 The citation number U.S. Pat. No. 4,744,922 is incorrect (page 1, line 31). It appears that the correct number is 4,744,992.